APPENDIX A: SOIL VAPOR DATA VALIDATION REPORTS



LABORATORY DATA CONSULTANTS, INC.

7750 El Camino Real, Suite 2l. Carisbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Geofon, Inc.

March 17, 2004

22632 Golden Springs Drive, Suite 270 Diamond Bar, CA 91765 ATTN: Mr. Tony Ford

SUBJECT: NASA JPL, DO #01, Data Validation

Dear Mr. Ford,

Enclosed is the final validation report for the fraction listed below. This SDG was received on March 5, 2004. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 11630:

SDG#

Fraction

GF020204-L6

Volatiles

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996

Please feel free to contact us if you have any questions.

Sincerely

Erlinda T. Rauto

Operations Manager/Senior Chemist

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NASA JPL Data Validation Reports LDC# 11630

Volatiles

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

NASA JPL

Collection Date:

February 2, 2004

LDC Report Date:

March 16, 2004

Matrix:

Soil Vapor

Parameters:

Volatiles

Validation Level:

EPA Level III

Laboratory:

H & P Mobile GeoChemistry

Sample Delivery Group (SDG): GF020204-L6

Sample Identification

SVW36-VPJ-001

SVW36-VPB-002

SVW36-VPC-003

SVW33-VPD-004

SVW33-VPE-005

SVW33-VPF-006

SVW32-VPH-007

SVW4-VPB-008

SVW4-VPD-009

SVW4-VPD-010Dup

Introduction

This data review covers 10 soil vapor samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

Internal standards data were not provided and therefore not reviewed.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples SVW4-VPD-009 and SVW4-VPD-010Dup were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

	The second secon	ration (ug/L)	
Compound	SVW4-VPD-009	SVW4-VPD-010Dup	RPD
Trichloroethene	14	12	15

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL Volatiles - Data Qualification Summary - SDG GF020204-L6

No Sample Data Qualified in this SDG

NASA JPL Volatiles - Laboratory Blank Data Qualification Summary - SDG GF020204-L6

No Sample Data Qualified in this SDG

GEOFON PROJECT # 04-4428.10
JET PROPULSION LABORATORY
4800 OAX GROVE DRIVE PASADENA, CA HAIP Mobile GeoChemistry Project #CPTD0004.LB
RISTRUMENT: ARLENT #350 OC / 5073 MASS SPECTROMETER
VOCATILE HALDGENATED AND AHOMATIC HYDROCARBONS (EPA Method 8263) ANALYSES OF SOIL VAPOR

SOIL WAPOR DATA IN UGIL-WAPOR

DATE	BLANK	BLANK COI	SVM36- VPB-002	SW36- VPC403	VPD-004	SWM3- VPE-805	SVW33- VPF-006	SVW32	SVM4	SWW4-	SYMM-199
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1,1-CICHLORO ETHANE	2	2	F	2	E	2	2	1	1	2	2
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1,1,1,2-TETRACHLORO ETHANE	P	2	1		ñ	E.	2	2	2	2	2
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LDC#:_1	11630A1	VALIDATION COMPLETENESS WORKSHEET	Date: 3	10/04
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			2nd Reviewer:	0-
METHOD	: GC/MS Volatile:	(EPA SW 846 Method 8260B)		/

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

_	Validation Area		Comments
1.	Technical holding times	#	Sampling dates: 2/2/04
11.	GC/MS Instrument performance check	4	
III.	Initial calibration	4	The mount of the second of the
IV.	Continuing calibration	*	
V.	Blanks	•	
VI.	Surrogate spikes	⋪	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	A	405
DC.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	4	Not provided & bt wiewed.
XI.	Target compound identification	N	The state of the s
XII.	Compound quantitation/CRQLs	N	the service of the se
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	4	
XVI.	Field duplicates	m	0=9+10
XVII.	Field blanks	N	

1 Paris 1 - 1	THE CONTRACT OF THE PARTY OF TH		
Note:	A = Acceptable	ND = No compounds detected	D = Duplicate
200	N = Not provided/applicable	R = Rinsate	TB = Trip blank
	SW = See worksheet	FB = Field blank	EB = Equipment blank

Validated Samples;

1	SVW36-VPJ-001	11	нв	21	31	
2_	SVW36-VPB-002	12		22	32	25.000
3_	SVW36-VPC-003	13		23	23	
4	SVW33-VPD-004	14		24	34	
5	SVW33-VPE-005	15		25	35	
8	SVW33-VPF-008	16		26	36	
7	SVW32-VPH-007	17		27	37	
8	SVW4-VPB-008	18	7-7-5-	28	38	
,	SVW4-VPD-009	19		29	39	
10	SVW4-VPD-010Dup	20		30	40	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	S. Trichisroethene	KK. TrichloroBuoromethane	CCC. tertibutytemsne	UUU. 1,2-Dichloroleirafluorogitene
B. Bronomethane	T, Dibromochloomethave	LL. Metryklanfoutyl ether	DOO. 1,24-Trimelty/Dercome	VVV. 4-Ellyflotume
C. Viny choride**	U. 1,1,2-Trichbroethans	MM. 1,2-Ditromo-3-chloropropens	EEE seoBulybenzene	www. Ehanol
D. Chizoethane	V. Benzane	NPL Mathyl ethyl ketone	FFF. 1,3 Okthorobercane	XXX. Di-leopropyl ether
E. Methylene chloride	W. trans-1,3-Dichloropropine	OO. 2,2-Dichloropropans	GGG, p-baymopyftoliume	YYY. lert-Butanol
F. Acetyne	X Bromotom*	PP, Bromochloromethans	HHL 1,4-Dictionobergene	ZZZ tert-Butyl alcohol
G. Carbon disulids	Y. 4-Methyl-2-pentamons	QQ. 1,1-Dichloropropere	III. n-Butybencane	AAAA. Ethyl lent-butyl ether
H. 1,1-Dichloroethene**	Z 2-Heranore	RR. Obnomomelhans	JJJ. 1,2-Dichlorobenzene	BBBs. ters-Armyl melthyl ether
L 1,1-Dichloroethane*	AA. Tetrachioroethene	SS. 1,3-Dichloropropane	KDDC 1,2,4-Trichlorobertzene	CCCC.1-Chlorehexam
J. 1,2-Olchionoethene, total	88. 1,1,2,2-Tetrachioroethane*	TT. 1,2-Obromosthans	LLL. Herachfordutadene	DDDD. Nopropyl alcohol
K. Chloroform**	CC. Toluene"	UU. 1,1,1,2-Tetrachlomothans	MMM. Neghtihalana	EEEE, Acatonitria
L. 1,2-Dichlorosthans	DO. Chlorobenzene*	VV. InspropyBenzene	NNN. 1,2,3-Th/phorbenzene	FFFF. Acrolein
M. 2-Butanone	EE. Elhytberzone"	WW. Bromobenzene	OOO, 13,5-Trichlorobergens	GGGG, Acytonitile
N. 1,1,1-Trichloroethane	FF. Styrene	XX. 1,2,3-Trichloropropane	PPP, trans-1,2-Dichloroethene	HIBBIL 1,4-Dioxans
O. Carbon tetrachloride	GG. Xyhenes, total	YY, n-Propyfberzene	QQQ, di-1,2-Dichloroethens	III. techutyl alcohol
P. Bromodichloromethane	HR4, Virryl acetate	22. 2-Chlorotohane	RRR. mp-Xylenes	JJJJ. Methacryfonlinile
Q. 1,3-Dichloropropane**	L. 2-Chlorosthykeyj ether	AAA 1,3,5-Trimethytbenzene	855. o-Vytena	KOOCK, Proplantifie
R. ds-1,3-Dichloropropens	JJ, Dichlorodifluoromethane	BBB, 4-Chlorotohuene	TTT, 1.1.2-Trichlors-1.2.2-billionselhans	mi.

^{* =} System performance check compounds (SPCC) for RRF; ** = Calibration check compounds (CCC) for %RSD.

LDC #:116	30A1 ,
SDG #:4	020204-66

VALIDATION FINDINGS WORKSHEET Field Duplicates

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Reviewer:	9
2nd reviewer:	-9-

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Compound	9	/10	RPD
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LABORATORY DATA CONSULTANTS, INC.

7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Geofon, Inc.

May 5, 2004

22632 Golden Springs Drive, Suite 270 Diamond Bar, CA 91765 ATTN: Mr. Scott Brehmer

SUBJECT: NASA JPL, DO #01, Data Validation

Dear Mr. Brehmer,

Enclosed is the final validation report for the fraction listed below. This SDG was received on April 27, 2004. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 11876:

SDG#

Fraction

GF040604-L6

Volatiles

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996

Please feel free to contact us if you have any questions.

Sincerely,

Erlinda T. Rauto

Operations Manager/Senior Chemist

LDC #11876 (Geofon, IncDiamond Bar / NASA Jet Propulsion Laboratory, DC#0001) SDC# RecT DAME									ا									HILLDON CONTRACTOR						I					I	I	I	Į	ı		I	l	1
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NASA JPL Data Validation Reports LDC# 11876

Volatiles

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

NASA JPL

Collection Date:

April 6 through April 9, 2004

LDC Report Date:

May 5, 2004

Matrix:

Air

Parameters:

Volatiles

Validation Level:

EPA Level III

Laboratory:

H & P Mobile GeoChemistry

Sample Delivery Group (SDG): GF040604-L6

Sample Identification

SVW33-VPD-001 SVW27-VPI-021 SVW33-VPE-002 SVW27-VPI-022Dup SVW33-VPF-003 SVW35-VPE-023 SVW17-VPC-004 SVW35-VPI-024 SVW4-VPB-005 SVW38-VPD-025 SVW4-VPD-006 SVW38-VPF-026 SVW37-VPB-007 SVW38-VPJ-027 SVW37-VPD-008 SVW39-VPE-028 SVW37-VPE-009 SVW39-VPF-029 SVW37-VPE-010Dup SVW39-VPG-030 SVW37-VPH-011 SVW39-VPI-031 SVW39-VPI-032Dup SVW37-VPI-012 SVW37-VPJ-013 SVW26-VPF-033 SVW27-VPA-014 SVW26-VPG-034 SVW27-VPB-015 SVW26-VPH-035 SVW27-VPC-016 SVW36-VPA-036 SVW27-VPD-017 SVW36-VPB-037 SVW27-VPE-018 SVW36-VPC-038 SVW27-VPF-019 SVW36-VPD-039 SVW27-VPG-020 SVW36-VPE-040 SVW36-VPE-041Dup

Introduction

This data review covers 41 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
4/7/04 (CCV2)	Chloroethane	32.6	SVW33-VPD-001 SVW33-VPE-002 SVW33-VPF-003 SVW17-VPC-004 SVW4-VPB-005 SVW4-VPD-006 SVW37-VPB-007 SVW37-VPD-008 SVW37-VPE-010Dup MB4/6/04	J (all detects) UJ (all non-detects)	۸
4/7/04 (CCV2)	Chioroethane	28.4	SVW37-VPH-011 SVW37-VPJ-012 SVW37-VPJ-013 SVW27-VPB-015 SVW27-VPC-016 SVW27-VPC-017 SVW27-VPE-018 SVW27-VPF-019 SVW27-VPG-020 MB4/7/04	J (all detects) UJ (all non-detects)	A
4/7/04 (CCVER1)	Chloroethane	38.9	SVW27-VPI-021 SVW27-VPI-022Dup	J (all detects) UJ (all non-detects)	A
4/8/04	Chloroethane	27.4	SVW35-VPE-023 SVW35-VPI-024 SVW38-VPI-025 SVW38-VPI-026 SVW39-VPE-028 SVW39-VPF-029 SVW39-VPI-031 SVW39-VPI-031 SVW39-VPI-032Dup MB4/8/04	J (all detects) UJ (all non-detects)	A

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

Internal standards data were not provided and therefore not reviewed.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples SVW37-VPE-009 and SVW37-VPE-010Dup, samples SVW27-VPI-021 and SVW27-VPI-022Dup, samples SVW39-VPI-031 and SVW39-VPI-032Dup, and samples SVW36-VPE-040 and SVW36-VPE-040Dup were identified as field duplicates. No volatiles were detected in any of the samples.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL Volatiles - Data Qualification Summary - SDG GF040604-L6

SDG	Sample	Compound	Flag	A or P	Reason
GF040604-L6	SVW33-VPD-001 SVW33-VPE-002 SVW33-VPE-003 SVW17-VPC-004 SVW4-VPB-005 SVW37-VPB-007 SVW37-VPB-009 SVW37-VPE-010Dup SVW37-VPE-010Dup SVW37-VPH-011 SVW37-VPH-012 SVW37-VPH-013 SVW27-VPH-015 SVW27-VPH-016 SVW27-VPH-016 SVW27-VPH-019 SVW27-VPH-021 SVW27-VPH-021 SVW27-VPH-021 SVW27-VPH-021 SVW35-VPH-025 SVW35-VPH-024 SVW35-VPH-024 SVW38-VPH-025 SVW38-VPH-025 SVW38-VPH-026 SVW38-VPH-026 SVW38-VPH-029 SVW39-VPH-031 SVW39-VPH-031 SVW39-VPH-031 SVW39-VPH-031 SVW39-VPH-031 SVW39-VPH-031 SVW39-VPH-031 SVW39-VPH-031 SVW39-VPH-031 SVW39-VPH-031	Chloroethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG GF040604-L6

No Sample Data Qualified in this SDG

GEOFON PROJECT # 04-12812
JET PROPULSION LABORATORY
4800 OAK GROVE DRIVE PASADENA, CA HP Late Project #GF040404-Le
INSTRILMENT: AGLIENT 6450 GC / 5973 MASS SPECTROMETER
VOLATILE HALDGENATIO AND AROMATIC HYDROCARBONS (EPA Motiod 6250) AMALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN LIGA.-VAPOR

CANC	BILANSKY	1000	SAVESS-	SWASS	SWM17.	SVM4-	SVMs-	Shares	States		
TWITE	A COLUMN	I COOL	VPE-002	VPF-003	VPC-004	VPB-005	VPD-008	VPB-007	VPD-008	SVW37-	SVW37-VPE-
ANALYSIS TIME	DECEMBE	940000	04/00/04	04/05/04	04/06/04	CAMBANA	Damana			Sona.	otocop
SAMPLING DEPTH (Nest)	270	7)42	8:07	934	4.55	6.28	0.40	- Control	04/06/04	04/06/104	04/05/04
VOLUME WITHDRAWN IN-	t	ş	105	120	28	8	***	10:10	10,45	11,14	11:40
VOLUME IN INCIDEN	ı	400	400	090	200		9	Ç	90	100	901
Oli (Floral Factories	2	8	2	\$		140	197	220	380	460	650
STATE OF THE PARTY	0.05	900	900	1	8	8	8	20	30	90	
			1	000	0.05	90'0	0.05	50.0	900		9
CARBON TETRACHLORIDE	2	1								000	900
CHLOROETHANE	1	2	8	2	2	2	,	1			-
CHLORDFORM	2	Z 143	IN Pu	IM M	TA LA	1		2	2	2	py
1 - 010 10 000 10 10 10 10 10 10 10 10 10 1	2	2	20	1	2	3	3	SEC	EX BY	MALL	T 1180
THE PROPERTY OF THE PARTY OF TH	5	-	ī	!	2	2	2	p	pur	1	2
1,2-CICH, ORO ETHANE	1		2	9	E	2	2	2	1		2
1,1-DICHLORO ETHENE	2 1	8	2	30	7.8	20	7	1	2	8	5
CE-12-DICHI CRO ETURNA	9	g	0,1	200	2	1	2	9	2	Z	E
There a product of the party of	90	25	5	7		8	2	2	2	8	7
SAME TO COLORO ETHENE	2	2	-	1	2	2	8	pe	20	2	1
DICHLOROMI THANE	2		2	8	2	8	ā	7	1		8
TETRACH CRO ETHEME	2 7	2	S	pu	2	P	2	1	1	8	g
1.1.1.2-TETRACH CON STRANS	2	per	2	pu	8.0	2	13	2	P	3	5
TO STATE OF THE PARTY OF THE PA	E	2	2	300	1	2	8	g	2	2	2
THE PROPERTY OF THE PARTY OF TH	pa	7	1	1	8	pq.	Į	Pd.	ħ	þ	-
1,1,1-THOCHLORIO ETHANE	8	1		2	2	2	g	2	100	1	
1,12-TRICHLORO ETHANE	1	2 7	Di	E	9	F	2	70	! ?	2	200
TRICHLORD ETHENE	2	8	Ħ	P	Pu	2	7	! ?	2	2	g
VIEW CHI DISIDE	2	8	2	90	4.0		1	2	2	S	B
Thought conduction	2	pu	20	1	1	\$	*	2	8	B	20
COLUMN CONTROL (FRI)	M	2	1	1 7	8 1	2	E	Ę	ē	8	1
LICALOHODIFLUOROMETHANE (FR12)	1	1	1	2	nd nd	ľ	8	P	2	1 7	2 7
1,1,2-TROALOROTRIFLUOROETHANE (FR118)	2	27	8 :	2	2	2	8		3		2
BENZENE		8	Du .	pu	ne	2	2	1 1	2 7	2	P
CHLOROBENZENE	2 1	B.	2	Die .	76	100	1		2	20	pu
ETHYLBENZENE	2	y:	Z	pu	P		2.7	2	2	9	5
TOLLIEVE	2	5	2	20	9.0	11	2 :	9	8	Pd.	2
and of the lines	2	2	2	1	11	8	2	2	20	S	7
HODAY LENES	92	2	1		8	2	pu	2	po	1	1
OAMUNE	1	1	1	5	-	2	20	2	7	1 1	2
SURROGATES (75-125% RECOVERY)			2	B	nd	Ę	P. C.	. 2	: 1	8	8
DIBROMODIFI, U DROME THANG	1000							2	8	Md	nd
1,2-DICHLORDETHANE-64	177.0	114%	113%	117%	81%	110%	1128				
4 BRONDFLUORO BENZEME	245	100%	100%	100%	40%	301%	106%	NO.	1175	118%	121%
1	100	200	100	200%	90%	9845	904	200	100%	307%	1115

ANALYSES PERFORMED ON-SITE RICH DOHS MOBILE LABORATORY #1561
ANALYSES PERFORMED BY: MARK BLINGE
DATA REVIEWED BY: TAMARA DAVIS

DATA REVIEWED BY: TAMARA DAVIS

022 Dup 0.05 118% 108% 82% 3 ğ 32 8 200 8 8 2 2035 2035 2035 S 2 558 8 2 1127 2 8 88 Z 1215 말말 E 04/07/04 11:00 8 8 0.05 8 8 8555 121% 108% 84% 8 5 8 B 2 555 MA 04/07/04 100 8 122% 106% 95% 8 555 2 2 2 3 3 MK VPD-017 \$ 8 8 8 g 110% S 8 S D M WPC-050 8 8 8 8 119% 108% 87% 2 3 VPB-015 04/07/04 9:15 n 2 1174 106% 8 2 2 5 3 8 8 2 A KJ VPA-014 8948 2 2 2 80 117% 8 28 2 2 S K NO INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UGL-VAPOR FOR EACH COMPOUND 185 8 8 900 117% 106% 93% B 2 S 04/07/04 200 5 6 5 2 112% 2 2 5 말말 2 2 28 MA ANALYBLIS PERFORMED OIL-SITE IN CA DOHS MOBILE LABORATORY 81551 VPH-011 04/07/04 2 155 98 8 8 555 8 2 5 BLANK 643 2 8 997 S B 8 8 1,1,3-TRICHLOROTHIR LUORDETHANE (FR113) ANALYSES PERFORMED BY: MARK BURKE DICHLORODIPLUOROMETHANE (FR12) TRICHLOROPLUCROMETHANG (FR11) SURROGATES (75-125%, RECOVERY) 1,1,1,2 TETRACHLORO ETHANE 1,1,2,2-TETRACHLORO ETHWE TRANS-1,2-DICHLORO ETHENE DIBROMODIFUTIOROMETHANE COS-1,2 DICHLORD ETHENE VOLUME WITHDRAWN (cc) 4 BROMOFLLIORO BENZENE CARBON TETRACHLORIDE A.1,1-TRICHLORO ETHANE A.1.2-TRICHLORO ETHANE SAMPLING DEPTH (feet) ✓ TETRACHLORO ETHENE 2-DICHLOROETHANE-44 A.NOICHLORO ETHANE **JOICHLOROMETHANE** TRICHLORO ETHENE VOLUME INJECTED DILUTION FACTOR CHLOROETHANE CHLOROBENZENE WINN, CHLORIDE ANALYBIS TIME ETHYLBENZENE CHLOROFORM map XYLENES BENZENE **JONNE** O-YMENE DATE

4800 OAK GROVE DRIVE PASADENA, CA

JET PROPULSION LABORATORY GEOFOW PROJECT # 04-12812

HP Labs Project #3F0+0604-L6

INSTRUMENT: AGILENT 6850 GC / 5873 MASS SPECTROMETER

VOLATILE HALOGEMATED AND ARCMATIC HYDROCARBONS (EPA Memos 8280) ANALYSES OF SOIL VAPOR

GEOFON PROJECT # 04-12812
JET PROPULSION LABORATORY
4800 CAK GROVE DRIVE
PASAGENA, CA

HP Labs Project #GFS40404.L6
RNSTRUMENT: AGLENT 6450 GC / 5573 MASS SPECTROWETER
VOLATILE HALOGENATED AND ARCMATIC HYDROCARSONS (EPA Method \$250) ANALYSES OF SOL VAPOR.
SOL VAPOR DATA IN UGA.-VAPOR.

	BLANK	VPE-023	VPHQ24	SWW36- VPO-025	SWADE.	SVW38-	SVW39-	SVW3D-	SWASE	SYM39-	SWASSAM
200	04/08/04	OLUMBUL	Stations.			125-5-14	VPE-028	VPF-028	VPG-039	VPI-031	035 000
ANALYSIS TIME	0.40		Andrews A	04/08/04	04/08/04	04/08/04	04/08/04	Outhanta	-		-
SAMPLING DEPTH fleats	200	7	272	8:16	0:10	0.17	40.04	-	04/08/04	04/06/04	90/00/50
VOLUME WITHING ANALYSIS	1	0	140	90	4.60		50.04	10.32	11:00	11:27	11.53
UNITED IN THE PARTY OF THE PART	ı	360	600	200		2	2	100	110	130	4.00
COLUMN INVESTIGATION	30	8	1	200	200	740	400	460	400		2
DALUTION FACTOR	0.00		2	R	2	8	90	1	2	000	200
	200	0.00	0,05	90'0	90'0	90'0	100	1	R	R	8
CARBON TETRACHLORIDS							200	000	9.05	0.05	0.00
CHLOROETHANS	P	2	pu	DQ.	1	1				1000	
CHLOROFORM	8	IN DA	TAL MA	7			2	23	nd	pu	5
Control Order	De la	1	3	3	3	3	30 50	MILT	TAIM		1
1, TUICHLORO ETHANE	2	1		3	2	5	pu			ż	3
1,2-DICHLORD ETHANE	1	2	2	Į	2	2	-	1	1	DQ.	2
1,1-DICHLORO ETHENE	2	2	2	2	2	1		2	2	2	ž
CIS-1,2-OICH ORD FTURNE	2	2	8	2	2	. 1	2	9	2	P	2
TRANS-12-DICHLORO ETURNO	9	5	B	2	1 2	8 7	2	g	2	2	2
DICHE CHOMETURANE	2	S	2	2	1	2	8	2	Ę	20	2
CHITACH COO STANIS	E	2	2	1	1 1	2	g	99	B	2	2
The state of the s	P	nd.	pu,	1	¥ :	2	8	2	8	2	1
ANY TELIMACHLONO ETHANE	pu	2	! 1	2	5	P.	Z	pp	7		2 1
1,1,2,2-18 TRACHLORO ETHANE	1	1 1	2	2	Z	2	5	2	1 2	1	8
1,1,1-THICHLORD ETHANE	1	20	2	E	2	B	2	1	2 1	5	ğ
1,1,2-TRICHLORO ETHANE	2	2	y	2	Ä	2	11	2 1	2	2	2
TRICHLORO ETHENE	8	5	g	2	2	1	2 1	5	Die .	2	2
WWY. CHLORIDE	2	5	B	2	2	2 7	2 ;	2	8	S	8
THOROGODOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOG	9	Z	E	g	1		2	*	Z	Б	8
DICH OROBET LOS CHETTAINS	9	B	5	2	1	2 1	90	DE .	Z	9	5
2-TRICAL DECTRIES INCOMES	ğ	Pe	2	1	2 1	8	8	2	2	9	1 2
BENNY OF THE PRINTED THAT OF THE PRINTED	P	2	2	2.7	8 7	5	ē	2	P	2	? ?
Chi Obolescosus	22	100	1	1	2	9	P.	9.2	2	. 2	2 7
ETAM MINTON	8	2	2	2 7	9	5	E	pu	po.	1	-
THE PRESENT AND ADDRESS OF THE PARTY OF THE	ā	2	1	2 7	2	5	Ę	pe u	2	2 2	D 7
NUMBER OF THE PROPERTY OF THE	2	1		2	ng	2	ğ	2		2 7	Bu
m&p-XYLENES		8	2	2	P	2	2	11		2	2
D-XYI, ENE	2 1	2	2	B	8		2	2	2	P	2
SURROGATES (75-125%, RECOVERY)	Du l	DQ.	p	nd	po	2 2	2 1	8	Į,	2	pe
DIBROMODIFUOROMETHANE	2007							9	g	pq	2
1.2-DICHLORDETHANE-da	4117	1125	128	115%	114%	200	-			25.55	
4 BROMOP, UGRO BENZENE	104%	100%	101%				10%	118%	120%	116%	118%
ľ	2/2	3698	26%				****	100%	306%	107%	110%
ANALYSIS AND THE PART OF TO UCAL WARDER FOR BACK COMPANY	IMT OF 1.0 U.C.	ALWAPOR #2	TO SACK DE		-	2	46.64	808	87%	9.696	2000

PSK 154

GEOFON PROJECT #04-12512
JET PROPULSION LABORATORY
4600 OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #07/040004-1.8
INSTRUMENT: AGLENT 6650 CC / 5973 MASS SPECTROMETER
VOLATILE HALDGEWATED AND AND ANDMATIC HYDROCARBONS (EPA Method 6250) ANALYSES OF SOIL VAPOR SOIL VAPOR DATA IN UGA.-VAPOR

	AMBENT	SWZ	SWAZE	SVM/ZB-	SVANSE	States				Charles Control Control
DATE	BLANK	VPF-033	VPG-034	VPH-035	VPA-038	VPB-037	VPC-036	SVW36-	SWAGE	SWW36-VPE-
AVALYSIS TIME	0400904	P4.09/04	04/09/04	04/09/04	DAMBOIN	Armen		-	W-2-040	Odd Dup
SAMPLING DEPTH (hear)	630	7.22	74	8:14	8769	- Company	OUTOBODA	040000	94,09/04	04/08/04
VOLUME WATHERSAME	r	116	140	180	8	200	9.33	10:00	10:27	10.54
VOLIME INTECTOR	1	520	620	200	1 5	R ;	90	75	95	82
District Parties	8	30	8	3 8	0 1	8	280	360	428	4444
The state of the s	0,05	900	0.08	2	R	R	20	8	20	8
				000	0.05	0,05	90'0	900	100	
CARBON TETRACHLORIDE	1	1								900
CHLOROTTHANE	2 1	2	2	20	pu	2	1	1		
CHLCROFORM	2	P	B	2	940	1	2	30	2	24
1,1-DICHLORD ETHANS	8	5	2	Did.	1	7 7	2	2	ğ	2
12-DICH ORO ETUANO	2	2	Þ	2	1	2	92	E	pu	99
11-Dichi 080 Erusun	P	P	2	1 1	2 1	90	2	2	2	2
City o Stole Con Carlotte	30	2	1	! 1	2	pu	2	pe	2	1
CHARLOND ETHENE	2	1	S	2	2	pu	Ē	8	1 7	
TRANS-1,2-DICHLORO ETHENEL	1 1	2	8	2	pu	Pa	1	! ?	8	2
DICHLOROMETHANE	2	Ħ	B	Du	900	1		9	2	2
TETRACH CRO ITACANS	2	S.	ņ	100	1		2	2	P	pu
111 2.TETBACH COO CO.	2	P.	8	1	1	è	B	2	2	90
SPECIAL CONTROL OF THE PARTY OF	2	2	1	2 1	9	2	pu	10	por	
ALL COLLECTION OF THE PROPERTY	Pu	1	2 7	2	2	g	Ped	-	1	2
1.1,1-TRICHLORO ETHANE	7	1	2	5	2	B	70	1	2	5
1,1,2-TRICHLORO ETHANE		2	2	P.	2	ě	1	2 1	Du	Di .
TRICHLORO ETHENIE	2	g	B	20	E	! ?	2	2	ě	2
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DICHLORODIFLUOROMETHANE (FR12)	1		8	ě	2	B	70	1		2
1,1,2-TRICHLOROTRIFLUGROETHAND SERVEN	2	8	P	Ę	P	7	1	2	2	p
BENZENE	2	P.	pu	20	2	11	8 1	2	5	B
CHLOROBENZENE	2	p	PF.	1			Bu	9	B	2
ETHYLBENZEME	2	2	E	2	2 2	2	2	2	B	1
TOURING	2	P	700	1	2	2	2	P	100	2 2
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mop-Artents	1	1	1	2	B	pu	pu	2	! ?	8
G-XYLENE	1	2	2	¥	2	2	1		2	2
SURROGATES (75-125% RECOVERY)	2	2	nd	P	2	1 2	2 2	9	E	2
DIBROMODIFLUOMOMETAME			2 15 E				2	8	b	po
12-DICHLOROETHANE-44	108%	2111	112%	114%	116%	116%	4000			
4 UROMOFILIORO BENZENE	2070	TOUR S	104%	106%	107%	107%	100%	119%	121%	120%
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AMERICAN AND AND AND AND AND AND AND AND AND A	JUNE OF TOUR	M.WAPOR I	OD BANKS	A company of the last	The sales	l	21.0	25.06	95%	DAM

ANALYSES PERFORMED ON-SITE IN CA DOHS MOBILE LABORATORY #1561

ANALYSES PERFORMED SY: MARK BURKE

DATA REVIEWED BY: TAMARA DAVIS

21/5/04

100 4 4	407044
LDC #: 1	1876A1
LUC W.	101001

VALIDATION COMPLETENESS WORKSHEET

SDG #: GF040604-L6

Laboratory: H & P Mobile GeoChemistry

Level III

Reviewer:

2nd Reviewer

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Technical holding times	A	Sampling dates: 4/6 - 9/04
n.	GC/MS Instrument performance check	4	
111.	Initial calibration	4	
IV.	Continuing calibration	W	
V.	Blanks	A	
VI.	Surrogate spikes	+	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	A	105
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	Not provided. Not reviewed "
XI.	Target compound identification	N	11200 27 20 1004 427 14 100 100 100 100 100 100 100 100 100
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	ND	D=9+10, 21+22 . 31+32. 40+41
XVII.	Field blanks	N	

Note:

Administration (Committee)

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SVW33-VPD-001	11	SVW37-VPH-011	21	SVW27-VPI-021	31	SVW39-VPI-031
SVW33-VPE-002	12	SVW37-VPI-012	22 1	SVW27-VPI-022Dup	323	SVW39-VPI-032Dup
SVW33-VPF-003	13	SVW37-VPJ-013	233	SVW35-VPE-023	334	SVW26-VPF-033
SVW17-VPC-004	14	SVW27-VPA-014	243	SVW35-VPI-024	34 7	SVW26-VPG-034
SVW4-VPB-005	15	SVW27-VPB-015	253	SVW38-VPD-025	354	SVW26-VPH-035
SVW4-VPD-006	16	SVW27-VPC-016	263	SVW38-VPF-026	364	SVW36-VPA-036
SVW37-VPB-007	17	SVW27-VPD-017	27 3	SVW38-VPJ-027	374	SVW36-VPB-037
SVW37-VPD-008	18	SVW27-VPE-018	283	SVW39-VPE-028	384	SVW36-VPC-038
SVW37-VPE-009	19	SVW27-VPF-019	293	SVW39-VPF-029	394	SVW38-VPD-039
SVW37-VPE-0100	up 20	SVW27-VPG-020	30 3	SVW39-VPG-030	404	SVW36-VPE-040
1 MB4/4/04		MB4/7/04	3	MB4/8/04	41	SVW36-VPE-041Dup

4 MB4/9/04

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	S. Trichicroethene	KK. Trichlorofluoromethene	CCC, tert-Butytbenzene	UUU. 1,2-Dichlorotefrafluoroethane
B. Bromomethane	T. Dibromochloromethane	LL. Methyl-tert-butyl ether	DDD. 1,2,4-Trimethy/banzane	VVV. 4-Ethylloluene
C. Vinyl choride**	U. 1,1,2-Trichlorcethane	MM. 1,2-Dbromo-3-chloropropana	EEE, sec-Buty/benzans	WWW. Ethanol
D. Chloroethana	V. Benzone	NN. Methyl athyl ketona	FFF, 1,3-Dichlorobenzene	XXX. Di-Isopropyl ether
E. Melhylene chlorida	W. trans-1,3-Dichloropropene	OO. 2,2-Dichloropropane	GGG, p-Isopropyflohusna	YYY, tert-Butanol
F. Acetone	X. Bromoform*	PP, Bromochionomethane	HRH. 1,4-Dichlorobenzene	ZZZ. hert-Butyf alcohol
G. Carbon disulide	Y. 4-Mothyl-2-penianone	QQ. 1,1-Dichloropropene	III. n-Butylbercane	AAAA. Ethyl tort-butyl other
H. 1,1-Dichloroethene**	Z. 2-Hexanone	RR. Dibromomethene	JJJ. 1,2-Dichlorobenzene	BBBB, tert-Arryl methyl ether
1. 1,1-Dichloroethane*	AA. Tetrachloroethene	SS. 1,3-Dichloropropane	KKK, 1,2,4-Trichlorobenzene	CCCC.1-Chlorohexane
J. 1,2-Dichloroethene, total	BB. 1,1,2,2-Tetrachloroethans*	TT. 1,2-Dibromoethana	LLL. Herachlorobuladiene	DODD, teopropył alcohol
K. Chloroform**	CC. Toluene**	UU. 1,1,1,2-Tetrachloroelhans	MMM. Naphibalone	EEEE. Acetonitrile
L. 1,2-Olchloroethane	DD. Chlorobenzene*	VV. hopropy/benzana	NNN. 1,2,3-Trichiorobenzene	FFFF. Acrolein
M. 2-Butanone	EE. Ethytbenzone**	WW. Bromobenzene	OOO. 1,3,5-Trichiorobenzene	GGGG. Acrylonitrile
N. 1,1,1-Trichloroethane	FF. Styrone	XX. 1,2,3-Trichloropropane	PPP, trans-1,2-Dichloroethene	HHHH. 1,4-Dloxane
O. Carbon tetrachloride	GG. Xylenes, total	YY. n-Propylbenzene	QQQ, ds-1,2-Dichloroethens	IIII. tsobutył alcohol
P. Bromodichloromethane	HH. Vinyl acetalo	ZZ. 2-Chlorotolusna	RRR. m.p-Xydenes	JJJJ. Methacrytonthile
Q. 1,2-Dichloropropane**	II, 2-Chloroethylvinyl ether	AAA. 1,3,5-Trimethy/benzone	SSS. o-Xylene	KROCK, Propionitrile
R. cis-1.3-Dichlomornoene	JJ. Dichlorodifluoromethane	888. 4-Chlorotoluena	TTT 1.12-Tieblom-122-Inflammentane	1111

^{* =} System performance check compounds (SPCC) for RRF; ** = Calibration check compounds (CCC) for %RSD.

DC #: 1/8" 41/

VALIDATION FIN AGS WORKSHEET Continuing Calibration

2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

KUN NIA KIN NIA

Was a continuing calibration standard analyzed at least once every 12 hours for each instrument? Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ? Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

# Date	Standard ID	Compound	Finding %D (Umit: <25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
46/04	Cc//2	A	32.6		1-10. HB4/6/04	1/4/ X
4/2/04	CE1/2	a	28.4		11-20	1/11/1
1/2/1	dello	,	- 1		MB4/7/04	1
4/104	cc/ox/	٩	58.9		1 1	J/44/A
4/8/04	80/2	A	8T.4			
11		100000			1	7/47/8
					404/2/04	
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LABORATORY DATA CONSULTANTS, INC.

7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Geofon, Inc. 22632 Golden Springs Drive, Suite 270 Diamond Bar, CA 91765 ATTN: Mr. Scott Brehmer

SUBJECT: NASA JPL, DO #12, Data Validation

Dear Mr. Brehmer,

Enclosed is the final validation report for the fraction listed below. This SDG was received on September 2, 2004. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 12426:

SDG # Fraction

GF071404-L6 Volatiles

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

Please feel free to contact us if you have any questions.

Sincerely,

Erlinda T. Rauto

Operations Manager/Senior Chemist

September 8, 2004

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NASA JPL Data Validation Reports LDC# 12426

Volatiles

Laboratory Data Consultants, Inc. **Data Validation Report**

Project/Site Name:

NASA JPL

Collection Date:

July 14, 2004

LDC Report Date:

September 7, 2004

Matrix:

Air

Parameters:

Volatiles

Validation Level:

EPA Level III

Laboratory:

H & P Mobile Geo Chemistry

Sample Delivery Group (SDG): GF071404-L6

Sample Identification

SVW39-VPI-001

SVW37-VPJ-002

SVW4-VPB-003

SVW4-VPD-004

SVW17-VPC-005

SVW33-VPD-006

SVW33-VPE-007

SVW33-VPF-008

SVW36-VPB-009

SVW36-VPB-010Dup

SVW36-VPC-011

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0%.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

Internal standards data were not provided and therefore not reviewed.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples SVW36-VPB-009 and SVW36-VPB-010Dup were identified as field duplicates. No volatiles were detected in any of the samples.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL

Volatiles - Data Qualification Summary - SDG GF071404-L6

No Sample Data Qualified in this SDG

NASA JPL

Volatiles - Laboratory Blank Data Qualification Summary - SDG GF071404-L6

No Sample Data Qualified in this SDG

GEOFON PROJECT #4+2812
JET PROPULSION LABORATORY
4809 CAK GROVE DRIVE
PASADENA, CA

HP Labs Project 8CF071404-L6 PRELIMINARY DATA

INSTRUMENT AGRENT 0850 GC / 5973 MASS SPECTROMETER
VOLATILE HALOGENATED AND ARCMATIC HYDROCARSONS (EPA MARKOS 1250). ANALYSES OF SOIL VAPOR SOIL VAPOR DATA IN LIGE-VAPOR.

	AMMIENT	201700	- PEARAG	- Participal		20000	-	STANCE OF	No.	HOLD MANAGE	NO CONTRACTOR	
	BLANK	VP1-001	VP.J-602	VPB-003	MPD-004	VPC-005	VPD-006	VPE-007	VPF-908	VPB-009	010 Dum	VPC-011
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SURPLOGATES (75-125%, RECOVERY)												
DIBROMODELLIONOMETHANE	121%	110%	110%	123%	122%	121%	118%	182	1145	114%	-100%	1000
A RECARCE UNESD SENSONS	11456	110%	117%	120%	121%	117%	110%	124%	1117	113%	106%	1000
* CHICAGO COLONIA DE PACENE	100%	4110	100000									

NO MOICATES MOT DETECTED AT A DETECTION UMIT OF 1.0 UGG, VAPOR FOR EACH COMPOUND.

ANALYSES PERFORMED ON-SITE IN CA DOIS MOBILE LABORATORY 42579

ANALYSES PERFORMED BY, MARK BURKE.

DATA REVIEWED BY: TAMARA DAVIS

LDC #: 12426A1 VALIDATION COMPLETENESS WORKSHEET

SDG # GF071404-L6

Level III

Reviewer: 9-2nd Reviewer:

Date: 9/3/04

Page: _of_

Laboratory: H & P Mobile Geo Chemistry

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
L.	Technical holding times	1	Sampling dates: 7/14/04-
II.	GC/MS Instrument performance check	A	
111.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	4	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	Á	
VIII.	Laboratory control samples	4	209
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	Not provided , not arriculd.
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	t	
XVI.	Field duplicates	ND	D=9+10
XVII	Field blanks		

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate

D = Duplicate TB = Trip blank

sheet FB = Field blank

EB = Equipment blank

Validated Samples:

Mair = pla SVW36-VPC-011 SVW39-VPI-001 21 22 32 SVW37-VPJ-002 12 23 33 3 SVW4-VPB-003 13 SVW4-VPD-004 14 24 34 4 SVW17-VPC-005 15 25 35 26 16 36 6 SVW33-VPD-006 27 17 37 SVW33-VPE-007 SVW33-VPF-008 18 28 38 SVW36-VPB-009 19 29 39 SVW36-VPB-010Dup 20 30 40 10



LABORATORY DATA CONSULTANTS, INC.

7750 El Carnino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Geofon, Inc.

December 22, 2004

22632 Golden Springs Drive, Suite 270 Diamond Bar, CA 91765 ATTN: Mr. Scott Brehmer

SUBJECT: NASA JPL, DO #12, Data Validation

Dear Mr. Brehmer,

Enclosed is the final validation report for the fraction listed below. This SDG was received on December 9, 2004. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 12885:

SDG#

Fraction

GF102504-L6

Volatiles

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

Please feel free to contact us if you have any questions.

Sincerely,

Erfinda T. Rauto

Operations Manager/Senior Chemist

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LDC #12885 (Geofon, IncDiam	DOE		01/04/05																							, iii					
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NASA JPL Data Validation Reports LDC# 12885

Volatiles

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

NASA JPL

Collection Date:

October 25 through November 3, 2004

LDC Report Date:

December 20, 2004

Matrix:

Soil Vapor

Parameters:

Volatiles

Validation Level:

EPA Level III

Laboratory:

H & P Mobile GeoChemistry

Sample Delivery Group (SDG): GF102504-L6

Sample Identification

CLANICA LITTA COA	CLAMP VIDE DOD	SVW36-VPE-055	SVW37-VPB-082
SVW31-VPA-001	SVW8-VPE-028		
SVW31-VPB-002	SVW11-VPA-029	SVW32-VPB-056	SVW37-VPD-083
SVW31-VPC-003	SVW11-VPB-030	SVW32-VPI-057	SVW37-VPE-084
SVW31-VPD-004	SVW9-VPA-031	SVW32-VPJ-058	SVW37-VPH-085
SVW31-VPE-005	SVW9-VPA-032Dup	SVW27-VPA-059	SVW37-VPI-086
SVW30-VPA-006	SVW9-VPB-033	SVW27-VPB-060	SVW37-VPI-087Dup
SVW30-VPB-007	SVW9-VPC-034	SW27-VPC-061	SVW37-VPJ-088
SVW30-VPC-008	SVW9-VPD-035	SVW27-VPD-062	SVW34-VPE-069
SVW30-VPD-009	SVW9-VPE-036	SVW27-VPE-063	SVW34-VPF-090
SVW30-VPD-010Dup	SVW10-VPB-037	SVW27-VPF-064	SVW38-VPD-091
SVW30-VPE-011	SVW10-VPD-038	SVW27-VPF-065Dup	SVW38-VPF-092
SW12-VPA-012	SVW14-VPA-039	SVW27-VPG-086	SVW38-VPJ-093
SW12-VPB-013	SVW14-VPB-040	SVW27-VPI-067	SVW6-VPB-094
SVW12-VPC-014	SVW33-VPA-041	SVW35-VPB-068	SVW6-VPD-095
SVW5-VPB-015	SVW33-VPB-042	SVW35-VPE-069	SVW6-VPE-096
SVW1-VPA-016	SVW33-VPB-043Dup	SVW28-VPA-070	SW15-VPB-097
SVW1-VPB-017	SVW33-VPC-044	SVW28-VPD-071	SW15-VPC-098
SVW1-VPC-018	SVW33-VPD-045	SVW28-VPE-072	SW15-VPC-099Dup
SVW2-VPA-019	SVW33-VPE-046	SVW26-VPF-073	SVW15-VPD-100
SW3-VPB-020	SVW33-VPF-047	SVW26-VPG-074	SW15-VPE-101
SVW3-VPB-021Dup	SVW33-VPG-048	SVW26-VPH-075	SVW39-VPF-102
SW3-VPC-022	SVW33-VPJ-049	SVW26-VPH-076Dup	SVW39-VPI-103
SW7-VPA-023	SVW36-VPA-050	SVW25-VPA-077	
SW7-VPB-024	SVW33-VPB-051	SVW25-VPB-078	
SVW4-VPB-025	SVW33-VPC-052	SVW25-VPI-079	
SVW8-VPC-026	SVW36-VPD-053	SVW25-VPJ-080	
SVW8-VPD-027	SVW36-VPD-054Dup	SVW19A-VPC-081	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

NASA JPL

Collection Date:

October 25 through November 3, 2004

LDC Report Date:

December 20, 2004

Matrix:

Soil Vapor

Parameters:

Volatiles

Validation Level:

EPA Level III

Laboratory:

H & P Mobile GeoChemistry

Sample Delivery Group (SDG): GF102504-L6

Sample Identification

SVW31-VPA-001	SVW8-VPE-028	SVW36-VPE-055	SVW37-VPB-082
SVW31-VPB-002	SVW11-VPA-029	SVW32-VPB-056	SVW37-VPD-083
SVW31-VPC-003	SVW11-VPB-030	SVW32-VPI-057	SVW37-VPE-084
SVW31-VPD-004	SVW9-VPA-031	SVW32-VPJ-058	SVW37-VPH-085
SVW31-VPE-005	SVW9-VPA-032Dup	SVW27-VPA-059	SVW37-VPI-086
SVW30-VPA-006	SVW9-VPB-033	SVW27-VPB-060	SVW37-VPI-087Dup
SVW30-VPB-007	SVW9-VPC-034	SVW27-VPC-061	SVW37-VPJ-088
SVW30-VPC-008	SVW9-VPD-035	SVW27-VPD-062	SVW34-VPE-089
SVW30-VPD-009	SVW9-VPE-036	SVW27-VPE-063	SVW34-VPF-090
SVW30-VPD-010Dup	SVW10-VPB-037	SVW27-VPF-064	SVW38-VPD-091
SVW30-VPE-011	SVW10-VPD-038	SVW27-VPF-065Dup	SVW38-VPF-092
SVW12-VPA-012	SVW14-VPA-039	SVW27-VPG-066	SVW38-VPJ-093
SVW12-VPB-013	SVW14-VP8-040	SVW27-VPI-067	\$VW6-VPB-094
SVW12-VPC-014	SVW33-VPA-041	SVW35-VPB-068	SVW6-VPD-095
SVW5-VPB-015	SVW33-VPB-042	SVW35-VPE-069	SVW6-VPE-096
SVW1-VPA-016	SVW33-VPB-043Dup	SVW28-VPA-070	SVW15-VPB-097
SVW1-VPB-017	SVW33-VPC-044	SVW28-VPD-071	SVW15-VPC-098
SVW1-VPC-018	SVW33-VPD-045	SVW28-VPE-072	SVW15-VPC-099Dup
SVW2-VPA-019	SVW33-VPE-046	SW26-VPF-073	SVW15-VPD-100
SVW3-VPB-020	SVW33-VPF-047	SVW26-VPG-074	SVW15-VPE-101
SVW3-VPB-021Dup	SVW33-VPG-048	SVW26-VPH-075	SVW39-VPF-102
SVW3-VPC-022	SVW33-VPJ-049	SVW26-VPH-076Dup	SVW39-VPI-103
SVW7-VPA-023	SVW36-VPA-050	SVW25-VPA-077	
SVW7-VPB-024	SVW33-VPB-051	SVW25-VPB-078	
SVW4-VPB-025	SVW33-VPC-052	SVW25-VPI-079	
SVW8-VPC-026	SVW36-VPD-053	SVW25-VPJ-080	
SVW8-VPD-027	SVW36-VPD-054Dup	SW19A-VPC-081	

Introduction

This data review covers 103 soil vapor samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report, Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

Internal standards data were not reviewed for this SDG.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples SVW30-VPD-009 and SVW30-VPD-010Dup, samples SVW3-VPB-020 and SVW30-VPE-021Dup, samples SVW9-VPA-031 and SVW9-VPA-032Dup, samples SVW33-VPB-042 and SVW33-VPB-043Dup, samples SVW36-VPD-053 and SVW36-VPD-054Dup, samples SVW26-VPH-075 and SVW26-VPH-076Dup, samples SVW37-VPI-086 and SVW37-VPI-087Dup, and samples SVW15-VPC-098 and SVW15-VPC-099Dup were identified as field duplicates. No volatiles were detected in any of the samples.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL

Volatiles - Data Qualification Summary - SDG GF102504-L6

No Sample Data Qualified in this SDG

NASA JPL

Volatiles - Laboratory Blank Data Qualification Summary - SDG GF102504-L6

No Sample Data Qualified in this SDG



GEOFON PROJECT # 64-12812-JPL JET PROPULSION LABORATORY 4500 DAK GROVE DRIVE PASADENA, CA

INSTRUMENT: AGRENT 8850 GC / 5973 MASS SPECTROMETER
VOLATILE HALDGENATED AND AROMATIC HYDROCARBONS (EPA Melhod 6260) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UGIL-VAPOR. HP Labs Project #GF 102504-L6

DATE AND A STREET OF THE STREET	BLANK	SVW31- VPA-001	SVW31- VPR-002	SVW31- VPC-003	SVW31- VPD-004	SWOT-	8VM30- VPA-006	SWW39- VPB-007	\$7W30- VPC-008	SVW30- VPD-009	SVW30-VPO-	SVW36-	SVW12-	5VW12- VPB-013	SVW12- VPC-014
DATE	102504	1025/04	10/25/01	10/25/01	102504	102504	10/25/04	10/25/04	10/2504	10/25/04	1005504	102501	1005001	1005001	*WOODN
ANALYSIS TIME	7:15	808	629	655	9:16	9.30	10,01	10:23	10.47	11-10	11:33	13.01	13.34	19-60	44.43
SAMPLING DEPTH (teet)		2	32	2	2	2	17	8	40	3	90	1	2	4	
VOLUME WITH DRAWN (cc.)		140	300	240	280	320	128	180	220	260	320	350	140	330	200
VOLUME INJECTED	R	2	8	2	2	2	2	50	30	8	30	2	66	1	1 8
DILUTION FACTOR	0.05	0.05	90'0	900	900	90.0	0.05	900	900	900	900	900	0.05	0.05	900
CARBON TETRACH CORDE	S	De la	pu	S	å	5	pu	2	2	2	2	946	1	1	1
CHLDROETHANE	2	S	9	9	2	5	2	2	1	2	1 1	1	1	1	! 1
CHLOROFORM	2	90	2	pu	2	8	2	8	2	2	2 1	1	1	2 7	2 7
1,1-DICHLORD ETHANE	2	pe	2	2	S	2	2	2	2	2 2	2 2	8 2	2 1	2 1	2 1
1,2-DICHLORO ETHANE	2	pu	2	8	90	ā	2	2	2		2 2	1	1	2 3	2 7
1,1-DICHLORO ETHENE	2	Pd	2	5	P	pu	2	9	2	2	2	1	1		1
CIS-1.2-DICHLORO ETHENE	2	5	2	pu	5	Du	2	P	pg	2	2	2 2	1	. 1	2 1
TRANS-1,2-DICHLORD ETHENE	90	5	P	pu	p	Pu	2	2	2	2	2	8	2	्ट	1 1
DICHLOROMETHANE	Pe	P	5	S	2	E	2	S	9	2	P	2	2	. 2	! 2
TETRACIA, ORO ETHENE	g	B	2	5	g	2	2	5	2	2	8	2	2	8	1
1.1.1.2-TETRACHLOND ETHANE	8	2	2	B	P	2	94	2	E	20	2	2	pu	ď	2
1,1,2,2-TETRACHLORO ETHANE	8	2	pu	2	2	2	8	5	E	S	2	2	P	2	5
1,1,1-TRICHLORO ETHANE	2	2	pe	2	2	2	E	5	E	8	2	ş	2	2	2
1,1,2-TRICHLORO ETHANE	2	2	B	2	2	g	B	P	P	5	2	P	z	P	pe
TRICHLORO [THENE	3	2	R	5	2	5	2	8	2	P	2	. 18	2	pu	2
VINYL CHLORIDE	2	8	3	B	g	Đ	Đ	2	2	P	P.	5	2	2	8
TRICHLOROFLUORCMETHANE (FR11)	2	2	2	B	pg	S	5	Ş	2	8	B	2	2	2	2
OICHLORODIFLUOROMETHANE (FIRES)	2	e a	2	ğ	P	g	2	S	pu	8	5	pu	Z	2	2
1,12-TRICHLOROTRIFLUOROETHANE (FR113)	Dig.	pu	PG .	g	pu	g	P.	8	g	8	2	8	20	Po	pu
DENZENE	gu	and a	B	92	P	9	m	8	pu	2	8	p	pu	20	200
CHLOROBENZENE	ž	Pe	Z	g	g	ğ	2	Pu	pu	2	9	2	Du	pu	2
ETHYLBINZENE	ğ	pu	g	8	8	B	5	ğ	pu	8	P	2	pu	90	8
TOLLENE	ğ	pu	2	Ä	ğ	g	2	be	pu	8	2	8	P.	5	20
m&p-xYLENES	ğ	pg.	PG.	ā	S	2	94	pu	P	2	Pe	S	2	2	1
o-xy, ene	ad .	pu	2	po	pu.	pu	90	pu	P	2	pu	2	2	2	2
SURROGATES (75-125% RECOVERY)															
DIBROMODIFULOROWETHANE	\$52	94%	342	90%	1996	200	898	94%	92%	598	946	93%	200	500	NO0
1.2-DICHLOROETHANE-04	95%	89%	11.02	460	100	7406	\$ 000 000 000 000 000 000 000 000 000 00	24%	90%	94%	24%	516	92%	26.95	210
4 BROMOFLUCRO BENZENE	518	D4%	536	94%	93%	92%	90%	2500	9547	91%	86%	200	25.2%	26.50	92%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UGA-VAPOR FOR EACH COMPOUND ANALYSES PERFORMED ON-STIT IN CA DONS MOBILE LABORATORY #2578
ANALYSES PERFORMED BY: MAINC BURKE
DATA REVIEWED BY: TAMARA DAVIS



GEOFON PROJECT # 04-12612-JPL JET PROPULSION LABORATORY 4800 OAK GROVE DRIVE PASADENA, CA

INSTRUMENT: AGLENT 6850 GC / 5973 MASS SPECTROMETER HP Labs Project #GF102504-L8

VOLATILE HALOGENATED AND ARGINATIC HYDROCARBONS (ÉPA Method 8268), ANALYSES OF SOIL VAPOR SOIL VAPOR DATA IN UGAL-VAPOR

	BLANK	SWMS- VPB-015	SVW1- VPA-016	SVW1	SWM1- VPC-018	SVW2-	SVW3- VPB-020	SVW3-VPB- 021 Dup	SVW3- VPC-022	SVW7.	SVW7- VPB-024	SVW4-	SVWB	SYMB-	SVWB
DATE	10/25/04	10/25/04	10/25/D1	10/26/04	10/26/04	10/25/04	10/26/04	10/36/04	MODERNA	*Unding	10/20/04	entrates.	- Contraction	- Comment	-
ANALYSIS TIME	7:19	8.04	8.27	15.0	10.54	11:17	11341	12:04	12.56	12.60	13.14	18.49	16.36	16.60	10,000
SAMPLING DEPTH (Nee)	1	•	2	25	33	0	23	R	00	90	36	200	5	70	
VOLUME WITHDRAWN (pc)	ı	×	904	3	192	100	176	236	230	140	300	9	200		2 5
VOLUME INJECTED	R	2	90	2	52	R	02	2	30	20	8	8	8	8	3 8
DILUTION FACTOR	90'0	0.05	90'0	900	0.05	0.05	900	90'0	0.05	90'0	0.05	0.05	0.05	90'0	90'0
CARSON TETRACHLORIDE	po	pu	po	p	pu	8	90	94	100	3	1	1	1	1	
CHLOROETHANE	2	2	pu	8	P	. 8	2	P	1	1	2 2	2 2	2 7	2 7	2 7
CHLOROFORM	8	pu	5	2	P	8	2	1 2	1 2	2	2 1	2 2	2 2	2 1	2 3
1,1-DICHLORO ETHANE	p	pu	2	B	2	E	P	8	12	2		1	1 3	1 3	2 1
1,2-DICHLORD ETHANE	PG.	uq	E	F	2	8	2	8	2	P	9	2	2		1 1
1,1-DICHLORO ETHENE	pu	2	2	To the	2	2	2	3	2	92	2	1	2	1 2	1
CIS-1,2-DICHLORO ETHENE	8	pu	2	2	B	臣	2	2	2	2	2	1	2	2	7
TRANS-1,2-DICH, ORD ETHENE	PW	pu	2	2	200	P	Đ	Z	2	ğ	2	2	99	2	1
DICHLOROMETHANE	£	R	P.	P	ě	P	pu	2	2	5	2	9	2	90	1 2
TETRACHLORO ETHENE	2	Ħ	9	ğ	pu	p	2	8	pu	g	2	2	M	2	2
1,1,1,3-TETRACHLORO ETHANE	5	2	ğ	pu	P	2	S	pu	P	E	200	2	2	pu	Z
1,12,2-TETRACH, ORD ETHANE	200	Z	g	P	2	pa	2	2	2	2	pu	pp	E	pu	E
1.1. HTRICHLORO ETHANE	Du.	2	5	P	S	H	2	DL.	2	2	P	pu	N	P	2
1,1,2-TRICHLORO ETHANE	Bu	ng.	9	PR	2	E	2	B	P	2	B	B	2	2	2
TRICHLORO ETHENE	P	P	2	2	2	2	2	B	2	2	2	×	P	2	2
VINYL CHLORIDE	ğ	P	2	2	¥	2	2	ě	P	2	Pu	2	5	5	2
TRICHLOROFLUCROMETHANE (FR11)	2	P	8	E	E	2	2	B	E	펻	E	2	P	2	P.
DICHLORODIFLUOROMETHANE (FR12)	ğ	5	2	ē	2	9	P	pu	2	P	2	2	ğ	E	Dil.
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	g	pu	g	P	P	g	pu	P	3	nd	pu	P	20	2	pu
BENZENE	g	P	2	2	2	2	nd	Pu	20	pu	8	g	g	pu	pu
CHLOROBENZEME	2	2	2	2	S.	9	B	2	92	pu	g	2	pu	8	Pu
ETHYLBENZENE	2	2	po	걸	2	2	2	2	2	P	H	2	5	8	pu
TOLUENE	9	P	2	20	2	p	B	B	2	pu	E	M	Bu	2	9
m&p-XYLENES	S	E	2	2	P	P	2	2	pu	N	2	2	Pu	2	S
o-XYLENE	g	trid.	99	B	pu	pu	pu	2	pu	N	2	pu	pu	2	2
SURROGATES (75-125% RECOVERY)		0.00 CON 0.00	28.89		1000										
DIBROMODIFLUCROMETHANE	598	95%	1686	\$11	34%	97%	93%	93%	24.95	346	2010	92%	76.26	9000	62%
1,2-DICHLOROETHANE-64	898 800	21%	21%	95%	93%	848	87%	%06	878	89%	%06	88%	21%	88%	87%
NOR NOR NOR THE PROPERTY OF THE PARTY OF THE	200	NOS	35.70	24.20	6229	24%	69%	656	83%	92%	91%	90%	2000	200	2000

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UGL. VAPOR FOR EACH COMPOUND AMALYSES PERFORMED ON SITE IN CA DOHS MOBILE LABORATORY #25.19.

ANALYSES PERFORMED BY: MARK BURKE

DATA REVIEWED BY: TAMARA DAVIS

GEOFON PROJECT # 04-12812-JPL. JET PROPULSION LABORATORY 4809 OAK GROVE DRIVE PASADENA, CA

MOBILE - GEOCHEMISTRY

INSTRUMENT: AGILENT 6950 GC / 5973 MASS SPECTROMETER. VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Mathed \$250). AMALYSES OF SOIL VAPOR SOIL VAPOR DATA IN UGALVAPOR. HP Labs Project #GF 102504-L6

	BLANK	VPA-029	VPB-030	VPA-031	SVWG-VPA-	VPB-033	VPC-034	VPD-035	VPE-036	VPB-037	VPD-038	VPA-039	VPB-040
DATE	10/27/04	10/27/04	10/27/04	10/27/04	10/27/04	10/27/04	10/27/04	10/27/04	10/27/04	10/27/04	10/27/04	10/27/04	10/27/04
ANALYSIS TIME	7,28	0:14	8738	8.06	9.20	2.53	10-17	10:40	11.04	11.28	11:50	13.30	13.63
SAMPLING DEPTH (feet)	٠	8	\$	2	92	38	8	20	18	38	8	iet	10
VOLUME WITHDRAWN (cc)	ı	140	220	140	200	200	280	340	409	200	336	90	100
VOLUME INJECTED	2	R	8	92	8	8	R	2	25	8	8	20	90
DILLITION FACTOR	900	900	90'0	0.05	90'0	0.05	90'0	900	90.0	900	0.05	900	90'0
CARBON TETRACHLORIDE	pu	pu	pu	pu	N	2	8	100	por .	pro-	1	1	1
CHLOROETHANE	pu	S	pu	M	2	5	2	pu	9	3	1	1 2	
CHLOROFORM	pu	5	pu	8	2	2	2	9	2	2	1 1		2
1,1-DICHLORO ETHANE	p	P	Đ	B	ž	5	P	pu	2	2	8	20	9
1,2-DICHLORO ETHANE	E	3	R	E	pu	Pu	P	P	2	2	2	2	9
1,1-DICHLORO ETHENE	2	2	P	2	P.	pu	Pu	E	90	2	70	pu	B
CIS-1,2-DICHLORO ETHENE	8	2	2	2	Pu	Pu	5	2	gu	2	2	2	B
TRANS-1,2-DICHLORO ETHENE	P	2	2	B	2	2	D	2	P	2	Page 1	pu	9
DICHLOROMETHANE	2	2	2	pu	Đ	P	B	2	2	P	2	2	8
TETRACHLORO ETHENE	ğ	2	Z	P	B	5	B	E	2	B	pu	nd	pu
1,1,1,2-TETRACHLORO ETHANE	P	p	Ħ	P	Z	2	B	5	Pe	P	ā	Z	2
1,1,2,2-TETRACHLORO ETHANE	p	ē	pu	bu	B	2	pu	P	P	2	ā	pu	5
1,1,1-TRICHLORO ETHANE	P	ŧ	B	pu	Pa .	랻	ē	ğ	8	P	2	2	5
1,1,2-TRICHLORO ETHANE	Ħ	S	2	2	2	B	90	B	E	8	B	ě	2
TRICHLORO ETHENE	P	E	2	5	2	S	2	2	S	2	3	ě	92
WWYL CHLORIDE	2	8	2	5	5	2	pu	P	8	E	Ε	2	pu
TRICHLOROFLUCROMETHANE (FR11)	2	E	2	5	pu	ğ	Z,	B	ē	2	2	P	P
DICHLORODIFLUOROMETHANE (FR12)	2	Z	2	2	ğ	pu	P	pu	2	S	2	pu	pu
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	DQ.	2	N	2	pu	pg	pu	M	2	3.9	9.0	pu	B
BENZENE	9	2	2	2	g	Di.	Po	2	S	Se.	20	pu	pu
CHLOROBENZENE	2	3	Z	2	ge	pe	H	2	6	5	2	P	E
ETHYLBENZENE	ğ	8	2	9	20	8	P	92	P	nd	2	92	ā
TOLUENE	2	ę	2	pe	8	2	8	2	P	2	2	P	2
m&p-XYLENES	ğ	5	2	B	å	E	2	2	ē	pu	20	8	2
0-XYLENE	nd	po	2	pu	8	2	P	2	P	pu	pu	2	70
SURROGATES (75-125% RECOVERY)	1000	1000	2422	10000									
DIBROMODIFLUOROMETHANE	34%	88%	9576	9436	93.8	%98	3576	925	95%	943	92%	910	24%
A DECACOLOROE INANE-44	95%	88%	91%	93%	25%	80%	24%	468	1406	94.30	91%	88% 88%	\$1,00
4 Brome Coole Bengana		25.0	80.00	#C2#	24.20	91%	91%	91%	92%	90%	9536	2000	914

NO WHILM TESTROT DETECTED AT A DETECTION UMIT OF 1.0 UBLIVAPOR FOR EACH COMMANYSES PERFORMED ON-SITE IN CA DOHS MOBILE LABORATORY #2519
ANALYSES PERFORMED BY: MARK BURKE
DATA REVIEWED BY: TAMARA DAVIS

T # 04-12812.JPL	DRIVE	
GEOFON PRIO	4800 OAK GND	PASADENA, CA

MOBILE - GEOCHEMISTRY

HP LIER PRINCIPATION 102504.46
NISTRILARIENT REGO GC / 5973 MASS SPECTROMETER
VOLATILE HALOGERATED AND ARDMATIC HYDROCARBONS (EPA Method 1050) AMALYZES OF 5CIL VAPOR 504, VAPOR DATA IN UGL.-VAPOR

SOC, VANCER DATA IN USA, VANCER	A. Carrier and A.	and the same	-1	-					- 1									
	BLANK	VPA-Out	500	344354FB-	VPC-044	VPD-045	SVM25-	SVW35		SVW35 VPJ-048	SWG6	SVMOs.	SVM36	SVM36 VPD-063	SWASAND.	8VM26	SW432-	SVMO2-
DATE	1002004	1023804	*	102904	NOTERON	1020AD1	102904	102804		10/25/01	10/18/04	90/00/04	100004	1000004	10/29/04	- ONCOL	100000	1000004
AVM, YS2S TWE	7,02	7.7	25%	619	841	000	979	1034	10.11	10.58	41-16	12.35	12:58	13.22	13.48	14.11	14.74	14.63
SAMPLING DEPTH (INI)	1	R	99	94	8	S	186	120	140	88	8	R	2	E	K	8	4	
VOLUME WITHORAWN (std.)	i	2	523	200	900	80	9	240	820	98	95	200	280	360	90	404	220	280
VOLUME INJECTED	R	2	10	2	8	2	22	30	R	R	2	2	30	20	9	8		
DAUTION PACTOR	910	900	98	200	900	900	900	900	900	900	990	800	900	900	500	900	900	800
CARBON TETRACH, ORDE	S	S	8	12	100	18	5	2	1	1	1	,	-	1				
CHLOROETHANE	*	2	7	2	1	i i		1	2 1	2 7	2 1	8	9	9	8	g	Z	ħ
CHICADICAN	1	1	1	2 7	1	2	8 7	8	8	P.	8	8	2	8	£	ğ	8	B
a COLDIN DED STREET	2 7	2 1	2 1	8 7	2 '	2	2	8	8	E	2	y	ğ	2	Ę	ğ	5	B
The state of the s	2	2	5	8	8	2	8	8	g	2	8	ž	2	2	2	2	5	H
LACOCHOMO ETHAMIC	ā	5	E	2	2	2	¥.	ž	g	Z	S	Y	8	5	9	2	20	3
CALCING STREET	2	E	g	ğ	2	5	2	2	2	8	P	¥	2	2	2	D.	9	2
CIS-1,2-DICHLOROETHENE	ĭ	2	2	8	8	E	ğ	2	5	E	8	2	pu	9	E	B	2	1
TRANS-12-DICHLOND ETHENE	ř	ñ	E	E	5	B	ä	S	8	E	8	2	2	8	2	1	1	1
DICHE DROMETHANE	Σ	8	9	ş	8	P	P	¥	2	2	20	90	8	2	2	1	1	1
TETRACHLONG ETHENE	8	2	2	P	2	8	F	2	9	8	P	20	1	1	1	1	1	1
1,1,1,3-TETRACHLORO ETHANE	B	7	R	2	8	ğ	8	2	2	1	9	1	1	1 1	1	1	1	2 :
1.1.2.2-TETRACHLORO ETHANE	P	8	2	90	9	b	3	1	2	1	! 1	! 1	1	1	2 7	2	5 1	2
1,1,1-TRICH,ORO ETHANE	2	8	90	8	2	1	1	1	1	1	! !	2 1	1	2	8	2	B .	8
1.13.TBICH ORD ETHANE	1	1	1	1	1.1		U	r	8 1	2	E	z	2	8	2	8	2	8
TOPIN STREET	1	2 7	2 1	2 :	8	7	2	8	2	ž	£	ğ	ı	2	2	ä	ğ	2
THEORY OF THEM	2	8 7	8	5	2	9	8	ľ	12	2	S	F	r	8	2	2	F	pu
THE CHICAGOS SOCIETY OF THE PARTY OF THE PAR	2	8	8	3	2	ğ	¥	8	2	2	ž	P	2	B	s	2	8	y
INCACONOMINE PRINT	8	5	8	2	8	5	2	8	3	2	ğ	B	9	B	×	2	2	2
CONTRACTOR CONTRACTOR CONTRACTOR	2	2	R	8	8	8	¥	9	ğ	2	2	8	ā	F	2	5	S	5
THE HOLD WITH THE PROPERTY OF THE PARTY OF T	8	8	8	2	8	5	¥	8	g	pu	P	B	g	P	M	2	8	P
BENZENE	8 1	2	8.	2	S	2	8	2	y	8	bu	M	H	8	ē	Be	5	P
Section and the section of the secti	8	2	2	8	2	ş	8	2	B	ž	Ę	B	ž	2	B	2	R	9
ETHYLDENZONE TOTAL	8	8	8	ğ.	2	¥	5	9	S	¥	'n	R	E	8	2	Ē	8	2
TOLUENE	8	S	P	8	8	8	ě	3	ä	g	¥	2	2	ž	y	2	7	9
# Spanishes	8	2	g	8	y	8	B	Z	R	B	F	P	2	2	ž	2	8	2
PATIENE	Sec.	8	B	S	pg	ž	2	2	y	y	2	9	Ä	8	2	1	1 2	1
SURROGATES (73-125%, RECOVERY)			7.7		100000		100											
OWNOWCOFFLUCING METHANS	94.0	103	248	N.06	160	No.	368	*08	NOR	N/36	808	888	100	275	200	300	1	200
A BROWN OF THANKING	200		210	N.Ze	100	100	210	NIN.	212	818	SP.	200	K00	200	100	214	278	W.C.0
+ Brown Livery Benefitte		É	212	NAC	MAN	6	818	818	900W	20.8	2010	91%	80%	958	80%	100	200	808
MINISTRACTOR ACTOR CONTRACTOR OF ACT ACTOR OF A	THE PERSON NAMED IN	THE PERSON NAMED IN	THE REAL PROPERTY.	THE PERSON OF THE	4													

NO INDICATES NOT DETECTED AT A DETECTION UNIT OF 18 UGL-WAPOR FOR EACH COMPOUND ANALYSES PERFORMED ON-SITE IN CA DONS MOBILE LABORATORY \$2579.
AVALYSES PERFORMED BY, MARK GURIGE
DATA REVIEWED BY, TAMMAR DAVIS.

GEOFON PROJECT # 04-12812-JPL JET PROPULSION LABORATORY 4600 OAK GROVE DRIVE PASADENA, CA

MOBILE - GEOCHEMISTRY

HP Labs Project RGF 102504-L6
INSTRUMINT: AGRENT 6650 GC / 5973 MASS SPIECTROMETER
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA IMMOG 6200), ANALYSES OF SOIL VAPOR SOIL VAPOR DATA IN UGA-VAPOR.

SOUL VAPOR DATA IN DUSC-YAPUR											
	BLANK	5VW32- VP3-058	SVW27.	SVW27- VPB-060	SVW27- VPC-061	SVW27-	SVW27- VPE-063	SVW27- VPF-064	SVW27.VPF. 065 Dup	SVW27.	SVW27.VPI- 067
DATE	10/23/04	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04
ANALYSIS TIME	7:19	90.8	8:30	8.53	517	8:30	10:02	10.24	10:46	11:21	11:44
SAMPLING DEPTH (feet)	1	196	8	35	09	98	001	25	120	140	180
VOLUME WITHDRAWN (cc)		840	140	200	300	400	460	240	009	620	200
VOLUME INJECTED	8	2	2	8	2	8	8	2	22	8	22
DIUTION FACTOR	900	90'0	0.05	90'0	50'0	900	0.05	0.05	90'0	9.05	90'0
CARBON TETRACHLORDE	pu	pu	5	P	po	B	pe	p	8	2	pu
CHLOROETHANE	2	pu	2	Pil	2	ž	2	2	2	Du	P
CHUCROFORM	팓	2	nd.	P	PE	P	S	8	2	pu	1
1,1-DICHLORO ETHANE	2	2	2	pu	2	2	2	S	P	B	2
1,2-DICHLORO ETHANE	p	3	2	2	8	B	8	2	2	2	P
1,1-DICHLORO ETHENE	PL	P.	26	2	8	P	ng.	2	F	P	2
CIS-1,2-DICHLORO ETHENE	B	2	po	5	90	Đ	pu	2	P	pu	20
TRANS-1,2-DICHLORO ETHENE	B	19	bu	2	2	B	pu	P	P	B	2
DICHLOROMETHANG	P	200	pu	ğ	8	2	pe	문	pu	2	2
TETRACHLORO ETHENE	2	PL	ā	2	9	2	8	F	Z	90	ě
1,1,1,2-TETRACHLORO ETHANE	¥	B	5	pu	P	2	P	P	E .	9	pu
1,1,2,2-TETRACHLORO ETHANE	2	8	8	pu	pu	잗	B	2	2	2	pu
1,1,1-TRICHLORO ETHANE	9	P	F	2	2	E	2	E	20	P	2
1,1,2-TRICHLORO ETHANE	2	E	pu	5	20	pu	2	2	ğ	P	N.
TRICHLORO ETHENE	ě	E	p	Ę	2	P	2	2	pu	pu	P
VINT. CHLORDE	pu	2	2	78	9	94	ğ	2	ā	2	2
TRICHLOROFLUOROMETHANE (FR11)	pu	8	2	2	E	2	2	2	B	B	Die .
DICHLORODIFLUCROMETHANE (FR12)	pu	g	Pu	90	90	2	9	9	B	pu	2
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	pu	pu g	pu	P	pu	P	pu	pu	E	B	pu
BENZENE	pu	pu	pu	Pu	20	2	2	pu	pu	pu	pu
CHLOROBENZENE	2	pu	p	ğ	2	g	pu	p	B	Ä	Ę
ETHYLBENZENE	2	2	g	pu	Pu	P	Ę	E	2	90	В
TOLLIENE	Z	E	3	P	B	P	8	B	2	9	Pu
m&p-XYLENES.	2	2	2	pu	Pa	pg	pu	2	2	po	20
o-XYLENE	pu	bu	5	M	pu	Del.	pu	P	2	2	pu
SURROGATES (75-125% RECOVERY)											
DIBROMODIFUUCROMETHANE	3436	5430	1526	1606	200	166	458	27%	97%	#59e	24.50
1,2-DICHLOROETHANE-d4	25.68	88%	91%	\$14	87%	92%	21%	24%	21.0	1606	%56
4 BROMOFLUORO BENZENE	9035	9008	90%	94%	54%	93%	90%	9446	768	818	80%

NO INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UGIL-VAPOR FOR EACH COMPOUND ANALYSES PERFORMED ON-SITE IN CA DOHS MOBILE LABORATORY #2579

ANALYSES PERFORMED BY: MARK BURKE DATA REVIEWED BY: TAMARA DAVIS

MOBILE GEOCHEMISTRY

GEOFON PROJECT # 04-12812-JPL JET PROPULSION LABORATORY 4800 OAK GROVE DRIVE PASADENA, CA

INSTRUMENT: AGLENT 6650 GC 75973 MASS SPECTROMETER.
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Mothod 6250), AMALYSES OF SOIL VAPOR SOIL VAPOR DATA IN UGL-VAPOR. HP Labs Project #GF 102504-L6

	MABIENT	SVW3F- VPB-068	SVW35- VPE-069	SVW26- VPA-070	SVW28	SVW28- VPE-072	SVW26- VPF-073	Sywze- VPG-074	SVW26- VPH-075	SVWZS-VPH- 076 Dup	SVW2S- VPA-077
DATE	11/01/04	1100004	11/01/04	11/01/04	11/01/04	11/01/04	11/01/04	11/01/04	11/01/04	11/01/04	11/01/04
ANALYSIS TIME	8.38	9:14	9:39	10:12	10:27	11:00	1134	11:57	1221	1244	13:15
SAMPLING DEPTH (bed)	,	Ħ	2	8	8	105	105	140	160	140	30
VOLUME WITHDRAWN (cc)		200	380	140	380	989	920	620	720	760	140
VOLUME INJECTED	30	8	2	2	90	8	8	8	8	8	8
DILUTION FACTOR	90'0	900	90'0	0.05	90'0	90'0	90'0	50'0	90'0	90'0	0.05
CARSON TETRACHLORDE	200	ā	pu	pu	2	p	3,4	pu	90	Pu	90
CHI, ORDETHANE	2	2	E	pu	P	P	pu	P	100	2	2
CHLOROFORM	P	2	2	S	2	2	8	ğ	p	2	92
1,1-DICHLORO ETHANE	9	2	2	99	ğ	2	8	2	2	pu	P
1,2-DICHLORD ETHANE	P	5	Z	B	P	ğ	2	P	ğ	2	pu
1,1-DICHLORO ETHENE	pa	ğ	2	2	P	ų	2	ğ	2	ş	P
CIS-1,2-DICHLORO ETHENE	pe	8	2	2	B	94	ng	pu	P	g	2
TRANS-1,2-DICHLORD ETHENE	B	2	ğ	20	2	pu	2	g	2	90	5
DICHLOROMETHANE	2	pe	2	2	g	P	2	92	2	pu	Ę
TETRACHLORO ETHENE	B	8	9	9	2	8	P	pu	2	pu	nd.
1,1,1,2-TETRACHLORO ETHANE	5	P	Đ	nd	2	B	g	pu	2	M	ş
1,1,2,2-TETRACHLORO ETHANE	2	8	g	pu	2	P	2	p	pu	2	g
1,1,1-TRICHLORO ETHANE	pu	P.	8	pg	9	g	R	8	P	E	pu
1,1,2-TRICH, ONO ETHANE	pu	9	2	8	Đ.	2	2	2	Pu	2	B
TRICHLORO ETHENE	E	gu	B	2	臣	2	2	g	8	P.	pu
VINY, CHLORIDE	E	2	2	ğ	2	pu	P	ğ	2	2	Pe
TRICHLORGFLUORCMETHANE (FR11)	P	pu	E	2	PL	9	캳	g	8	12	pu
DICHLORODIFLUOROMETHANE (FR12)	p	92	p	200	B	pu	20	pu	R	pg	or or
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	2	pu	pu	nd Sir	pu	pu	net	20	20	bu	2
BENZENE	8	B	pu	100	pu	pu	P	pu	gu	pu	20
CHLOROBENZENE	P.	p	P	Đũ.	g	P	Đ	B	pu	PI	Pd
ETHYLBENZEME	2	pg	2	pu	B	Z	B	B	pu	PE	2
TOLUENE	ğ	E	Pu	50	8	2	9	Dir	pg	P	20
m&p-XYLENES	29	Pu	P	ğ	2	2	2	12	PL	pu	pu
o-XYLENE	pu	2	P	pu	2	P.	2	pu	pu	pu	pu
SURROCATES (75-125% RECOVERY)	2000										
DIBROMODIFUOROMETHANE	5,06	250	200	2610	96%	95%	93%	95%	97%	9435	92%
12-DICHLOROETHANE-44	93%	92.0	93%	200	818	92%	55.60	91%	80%	80%	80%
4 INCOMOPTUCANO BENZEME	808	r.	r c	872	828	94%	83%	94%	93%	97.0	1,06

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UGA-VAPOR FOR EACH COMPOUND ANALYSES PERFORMED ON-SITE IN CA DOHS MOBILE L'ABORATORY #2579
ANALYSES PERFORMED BY: MARK BURKEL
DATA REVIEWED BY: TAMARA DAVIS



MOBILE GEOCHEMISTRY

ART PROPULSION LABORATORY #800 DAK GROVE DRIVE

PASADGNA, CA

HE LINS Project #05 F00504-L8

INSTRUMENT: ADJIENT 6850 OC / 5673 MASS SPECTROMETER
VOLATLE HALDGENATED AND ARGMATIC HYDROCARBONS (EPA Method 9250) - AMALYSES OF SOIL VAPOR SDIL, VAPOR SDIL, VAPOR DATA BY UGA, VAPOR

SURL VAPOR DATA IN DAIL VAPOR			11.00.00														
	BLANK	SVM2S- VFB-78	SVW25- VPLOTS	\$VM25- VPJ-050	SWYIBA- VPC-081	\$W037-	SW437- VPD-083	SVM37. VPE-084	SVMST- VPH-085	SWW27.	5VM37-VP1- 087 Out	SVWST- VPJ-088	SVW34-	SVW34-	SVW38	SVM36- VPF-080	SVMSe
DATE	11/02/04	11,02/04	11/0204	11/02/04	110204	110204	110204	110204	1100084	110364	11/60/04	11/00/06	Manuel	******	-	******	· · ·
ANALYSIS TIME	2:10	742	808	830	8.34	9.20	2.63	10-00	10.36	11.05	11.22	13-13	27-61	19.19	10.34	13.64	10000
SAMPLING DEPTH (her)	ī	2	9	180	3	99	8	100	156	170	47.0	186	8	90			12.00
VOLUME WITHDRAWN (cc)	,	2200	780	820	300	220	360	460	660	740	900	900	9	1	1	200	
VOLUME INJECTED	2	30	30	92	30	20	90	8	8	8		1	1				
DILUTION FACTOR	0.05	800	900	90'0	900	900	90'0	90'0	90'0	0.05	0.05	900	999	900	0.03	000	900
CARBON TETRACH, ON DE	94	Per	B	2	ng g	18	99	pu	2	900	1	1	1	1	1	,	
CHLOROSTHAME	940	1	94	94	944	90	1	1	1		! 1	2.7	1	2.1	2 1	2	2
CHLOROFDRA	1	1	1	1	1	1	1	1	1	2 3	2	2	8	90	E	5	2
1. JOCK ORD FTHAME	1	1	1	1	11	1	2.1	8 1	2 1	8	2	2	2	90	5	9	2
Section Cold and the Cold and t	1	1	1			2 :	2	2	8	2	2	g	90	D.	E	90	2
1,2 OKCH, CHO ETHANE	2	2	2	2	8	2	¥	P	2	2	nd n	ě	94	2	2	2	ş
I,1-CHCHLOHO ETHENE	g	2	ā	2	9	ğ	r	2	P	2	pu	5	94	2	P	5	B
CIS-1,2-DICHLORO ETHENE	2	2	ž	2	2	2	ī	pu	T	2	De.	2	9	P	pu	pu	90
TRANS-L2-DICH, OND ETHENE	D.	¥	7	Đ	P	P	ğ	2	P.	5	2	P	pu	2	8	De .	ě
DICHLOROWETHANG	n n	2	P	ų	2	DE .	2	P	90	t	P	94	B	P	p	100	94
TETRACHLORO ETHENE	2	E	2	ğ	5	P	ğ	9	S	ğ	bu	Pe	9	2	ä	2	2
I, I, J. TETRACHLORD ETHANE	S.	ä	5	¥	2	9	1	9	pu	2	2	2	2	7	ï	8	ā
1,1,2,2,1ETRACHLORO ETHANE	2	P	2	2	g	2	2	pu	90	96	P	Ŗ	2	2	2	N.	P
I,T,T-TRICHLOND ETHANE	P	2	2	N	2	2	ž	pe	90	2	2	8	9	H	¥	90	9
L.L.2-THICHLORD ETHANS	t d	pu	M	P.	90	2	2	pu	90	2	ğ	P	2	2	2	20	2
TRICHLORO ETHENE	ğ	F	Y	Z	S	8	B	2	B	2	¥	9	H	8	B	9	*
WWYL CHLORIDE	ě	Ŋ	2	2	S	8	9	P	P	1	¥	2	2	2	2	p	9
TRICH COROFLUOROMETHANE (FR11)	1	2	**	2.2	Z	ž	pu	8	2	ğ	2	9	2	8	2	90	92
DICHLOROCIFLUDROMETHANE (FR12)	ï	¥	2	5	90	gi	9	P	2	P	2	2	2	9	ğ	2	2
1,1,2-TRICHLOROTRIYLUOROETHANG (FR113)	94	DQ.	nd	DQ.	90	ad	p ₀	pu	2	þ	M	20	2	Pe	2	2	1.6
BENZENE	n n	D.	na	pw	an	pu	pu	pu	pu	99	pu	2	pu	BW	P	po	B
CHLOROBENZENE	8	2	Z	9	90	9	B	P	2	9	2	ge .	8	P	9	B	2
ETHYLBEAZENE	2	2	2	2	9	2	P	2	2	2	ğ	2	90	2	2	ě	2
TOUNENE	2	Y	94	Per	20	2	2	2	P	2	Į	2	2	9	90	90	0.1
edp-XYLEVES	P	P.	2	24	2	ā	E	E	P	pu	9	10	pe	94	2	94	7
DXYLENE	pu	36	P	2	pu	pu	20	5	p	nd	20	2	94	2	90	2	1 2
SURROGATES (75-125% RECOVERY)	000																
CHERCHADIFLUOROMETHANS	25%	808	100%	15.65	#58 #	200	25.00	198	506	7,68	200	168	27.0	NH	27%	25%	100%
T.S. DICHLOROETHANS 64	7	2	200	94%	*50	4.60	24%	200	74.50	404	1001	NON	200	ž	15.00	**	1000
4 BROWOP, UOPO RENZENE	808	243	92%	200	10.00	83%	94%	808	900	Serie	85%	MA	200	2000	BANK	276	2000

ND INCICATES NOT OFFICIED AT A DEFECTION LIMIT OF 1.9 UGA. VAPOR FOR EACH COMPOUND ANALYSES FERFORMED ON-SITE IN CA. DONS MORILE LIBORATORY #2579
ANALYSES PERFORMED BY: MARK BURNE
DATA REVIEWED DY: TAMARA DAVIS

GEOFON PROJECT # 04-12812-JPL JET PROPULSION LABORATORY 4800 DAX GROVE DRIVE PASADENA, CA

MOBILE - GEOCHEMISTRY

HP Labs Project RGF 102504-L6
INSTRUMENT: AGA, ENT 6650 GC / 5973 MASS SPECTRONETER
VOLATILE HALOGENATED AND ARCMATIC HYDROCARBONS (EPA Method 8260), ANALYSES OF SOIL VAPOR SOIL VAPOR

SOLVE THE LANGE THE CONTROLLED	A LABOUR DAY	Others same	Party and Court and Court and Court	The same of							-
	BLANK	160	960	DED COMP	VPB-097	VPC-098	Sywts-vPC-	VPD-100	SWHS- VPE-101	SVW39- VPF-102	SVM38-VPI.
DATE	11703/04	11/03/04	11/03/04	11/03/04	11/03/04	11/03/04	11/03/04	11/03/04	11/03/04	11/03/04	11,0004
ANALYSIS TIME	7.53	6:17	B:40	50.0	931	10:01	10:20	10:49	11.21	12.03	12.30
SAMPLING DEPTH (feet)	1	40	11	g	40	8	9	36	90	100	***
VOLUME WITHDRAWN (cc)	ŧ	220	368	444	220	300	360	360	440	700	200
VOLUME INJECTED	50	30	2	2	20	8	30	30	8	8	98
DILUTION FACTOR	0,03	0.05	900	90.0	60.0	900	0.05	50'0	9.05	0.05	0.05
CARBON TETRACHLORIDE	2	po	pu	pu	100	2	2	1	1		
CHLOROETHANE	P	2	2	9	2	1 2	1	2 7	2 1	2 7	9 1
CHLOROFORM	pu	9	2	90		1	1	1	2 7	8 7	2
ETHANE	P	2	2	2	2 2	2	2 2	2 7	2 7	8 7	2 7
1,2-DICHLORO ETHANE	pu	90	gu.	2	2	1	1 1	2	2	2 1	8 7
1,1-DICHLORO ETHENE	B	2	2	5	2		. 1	2 7		2 7	2 7
CIS-12-DICHLORO ETHENE	5	8	2	8	100	1	! 1	1	2 3	2 7	2 1
TRANS-1,2-DICHLORO ETHENE	2	멸	2	2	90	90		2 2	2 2	2 2	2 7
DICHLOROMETHANE	pu	pu	pu	2	2	90	-	1	2	2 7	2
TETRACHLORO ETHENE	2	pe	90	2	9	94		? ?	2	2	2 1
1,1,1,2-TETRACHLORO ETHANE	2	ğ	pu	2	1	2		1	2	1	2 1
1,12,2-TETBACHLORO ETHANE	P	8	2	2	1	1	2 2	1	2 7	2 7	9 7
1.1.1-TRICHLORO ETHANE	2	2	pu	1	1	1	2	2 7	2	8 3	9
1.1.3.TBICHI CBO BTHANK	1	1	1	2	2 7	9	8	2	Pu	5	90
TOPON COO STREET	2 7	2	9	2	20	2	9	2	B	8	P
TRICHCOND ETHENE	2	8	Pu	2	3	P	g	2	P	**	1.4
VINT. CHLORIDE	2	2	g	5	2	P	8	2	Z	8	Pu
TRICHLOROFLUOROMETHANE (FR11)	2	R	ğ	2	B	Pa	8	20	2	S	P
	Ę	2	B	2	20	Pa	3	2	E	S	2
1,12-TRICHLOROTRIFLUCROETHANE (FR113)	pu	2	pu	pu	g	pu	P.	ad	9	92	5
BENZENE	B	pu	pu.	pu	pu	5	2	pu	5	5	pg
CHLOMOBENZEME	9	2	P	p	2	E	2	Z	2	ē	200
ETHYLBENZENE	Z	2	P	p	20	2	2	90	9	911	pu
TOLUENE	2	ğ	P	Pu	2	5	2	2	Pie	9	pu
m&p-XYLENES	2	2	B	P	20	Đũ.	2	pu	94	92	2
o-XYLENE	pu	pu	pu	B	pu	Pig	8	bu	90	0	90
SURROGATES (75-125% RECOVERY)											
DISHOMODIFUDGOMETHANE	200%	1600	25.50	80%	16.98	25.00	95.66	27%	200	25.00	998
1,2-DICHLOROETHANE-64	96%	201%	26.28	86%	165%	9446	96%	7666	35.00	96%	40%
4 BROMOFLUORO BENZENE	96%	27.6	90%	83%	92%	94%	7696	200	9646	0.844	200
			The Person named in column 2 is not to the Person named i					The same	Married Marrie	200	and the same

NO NDICATES NOT DETECTED AT A DETECTION LIMIT OF 1,0 UGA, VAPOR FOR EACH COMPOUND ANALYSES PERFORMED ON-SITE IN CA DONS MOBILE LABORATORY #2579
ANALYSES PERFORMED BY: MARK BURKE
DATA REVIEWED BY: TAMARA DAVIS

LDC #: 12885A1

VALIDATION COMPLETENESS WORKSHEET

SDG #: GF102504-L6

Level III

Page: _/of-3 Reviewer: _Q___

2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area	-	Comments
1.	Technical holding times	4	Sampling dates: 10/25 - 11/3/04
11.	GC/MS Instrument performance check	4	
m.	Initial calibration	A	72
IV.	Continuing calibration	4	
V.	Blanks	4	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	rot regard for vage
VIII.	Laboratory control samples	A	209
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	Not uniewed.
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	ND	D=9+10.20+24.31+32.42+43.53+54.75+76
XVII.	Field blanks	N	86+87 - 98+99

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

EB = Equipment blank

Validated Samples:

	SVW31-VPA-001	11	SVW30-VPE-011	21	SVW3-VPB-021Dup	31	SVW9-VPA-031
2	SVW31-VPB-002	12	SVW12-VPA-012	22	SVW3-VPC-022	32	SVW9-VPA-032Dup
3	SVW31-VPC-003	13	SVW12-VPB-013	23	SVW7-VPA-023	33	SVW9-VP8-033
4	SVW31-VPD-004	14	SVW12-VPC-014	24	SVW7-VPB-024	34	SVW9-VPC-034
5	SVW31-VPE-005	15	SVW5-VP8-015	25	SVW4-VPB-025	35	SVW9-VPD-035
5	SVW30-VPA-006	16	SVW1-VPA-016	26	SVW8-VPC-026	36	SVW9-VPE-036
_	SVW30-VPB-007	17	SVW1-VPB-017	27	SVW8-VPD-027	37	SVW10-VPB-037
_	SVW30-VPC-008	18	SVW1-VPC-018	28	SVW8-VPE-028	38	SVW10-VPD-038
1	SVW30-VPD-009	19	SVW2-VPA-019	29.3	SVW11-VPA-029	39	SVW14-VPA-039
0	SVW30-VPD-010Dup	20	SVW3-VPB-020	30	SVW11-VPB-030	40	SVW14-VPB-040

LDC #: 12885A1

VALIDATION COMPLETENESS WORKSHEET

SDG #: GF102504-L6

Level III

Page: 10f 3
Reviewer: 9

Laboratory: H & P Mobile Geo Chemistry

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
t.	Technical holding times		Sampling dates:
11.	GC/MS Instrument performance check		3 1
111.	Initial calibration		
IV.	Continuing calibration		
V.	Blanks		
VI.	Surrogate spikes		V
VII.	Matrix spike/Matrix spike duplicates		Δ'
VIII.	Laboratory control samples		, r \
IX.	Regional Quality Assurance and Quality Control	N.	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
X.	Internal standards		6'
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	-0/
XIV.	System performance	N	de
XV.	Overall assessment of data		
XVI.	Field duplicates		
XVII.	Field blanks		3 SHC-7

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

Validated Samples:

414	SVW33-VPA-041	51	SVW33-VPB-051	61	SVW27-VPC-051	71	SVW28-VPD-071
42,	SVW33-VPB-042	52	SVW33-VPC-052	62	SVW27-VPD-062	72	SVW28-VPE-072
43	SVW33-VPB-043Dup	53 1	SVW36-VPD-053	63	SVW27-VPE-053	73	SVW26-VPF-073
44	SVW33-VPC-044	54	SVW36-VPD-054Dup	64,	SVW27-VPF-064	74	SVW26-VPG-074
45	SVW33-VPD-045	55	SVW36-VPE-055	65	SVW27-VPF-065Dup	75	SVW26-VPH-075
46	SVW33-VPE-046	56	SVW32-VPB-056	66	SVW27-VPG-066	76	SVW26-VPH-076Dup
47	SVW33-VPF-047	57	6VW32-VPI-057	67/	SVW27-VPI-067	77 /	SVW25-VPA-077
48	SVW33-VPG-048	58 5	SVW32-VPJ-058	68	SVW35-VPB-068	787	SVW25-VPB-078
49	SVW33-VPJ-049	59	SVW27-VPA-059	69	SVW35-VPE-069	79	SVW25-VPI-079
50	SVW36-VPA-050	60	SVW27-VPB-060	70	SVW28-VPA-070	80	SVW25-VPJ-080

LDC #: 12885A1

VALIDATION COMPLETENESS WORKSHEET

SDG #: GF102504-L6

Level III

Reviewer.

2nd Reviewer.

Laboratory: H & P Mobile Geo Chemistry

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times		Sampling dates:
11.	GC/MS Instrument performance check		- 20
JII.	Initial calibration		2507
IV.	Continuing calibration		
V.	Blanks		
VI.	Surrogate spikes		nel .
VII.	Matrix spike/Matrix spike duplicates		Ar.
VIII.	Laboratory control samples		x 00 V
IX.	Regional Quality Assurance and Quality Control	N	6
X.	Internal standards		
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	see
XIII.	Tentatively identified compounds (TICs)	N	.,
XIV.	System performance	N	
XV.	Overall assessment of data		
XVI.	Field duplicates		
XVII.	Field blanks		

Note:

A = Acceptable N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

Validated Samples:

81	SVW19A-VPC-081	91	SVW38-VPD-091	101	SVW15-VPE-101	1111	MB10/25/04
82	SVW37-VPB-082	92	SVW38-VPF-092	102	SVW39-VP5-102	112	MB10/56/04
83	SVW37-VPD-083	93 /	SVW38-VPJ-093	103	SVW39-VPI-103	1133	MB10/= 104
84	SVW37-VPE-084	948	SVW6-VPB-094	104		4	MB10/28/04
85	SVW37-VPH-085	95	SVW6-VPD-095	105	5,011,921	115	MB10/29/04
86	SVW37-VPI-086	96	SVW6-VPE-096	106		115	MB+0/1/04
87	SVW37-VPI-087Dup	97	SVW15-VPB-097	107		117	MB11/2/04
88	SVW37-VPJ-088	98 ,	SVW15-VPC-098	108		118	MB11/3/04
89	SVW34-VPE-089	99	SVW15-VPC-099Dup	109	7 - 17	119	///
90	SVW34-VPF-090	100	SVW15-VPD-100	110		120	